SEQUENCE LISTING

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<120> HIV-PEPTIDE-CARRIER-CONJUGATES

<130> PA059WO

<150> US 60/457,348
<151> 2003-03-26

<160> 128

<170> PatentIn version 3.2

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gggggggcgac gacgatcgtc gtcgggggggg 30

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<212> PRT
<213> Bacteriophage Q-beta

<400> 10

Ala Lys Leu Glu Thr Val Thr Leu Gly Asn Ile Gly Lys Asp Gly Lys
1 5 10 15

Gln Thr Leu Val Leu Asn Pro Arg Gly Val Asn Pro Thr Asn Gly Val
20 25 30

Ala Ser Leu Ser Gln Ala Gly Ala Val Pro Ala Leu Glu Lys Arg Val
35 40 45

Thr Val Ser Val Ser Gln Pro Ser Arg Asn Arg Lys Asn Tyr Lys Val
50 55 60

Gln Val Lys Ile Gln Asn Pro Thr Ala Cys Thr Ala Asn Gly Ser Cys
65 70 75 80

Asp Pro Ser Val Thr Arg Gln Ala Tyr Ala Asp Val Thr Phe Ser Phe
85 90 95

Thr Gln Tyr Ser Thr Asp Glu Glu Arg Ala Phe Val Arg Thr Glu Leu
100 105 110

Ala Ala Leu Leu Ala Ser Pro Leu Leu Ile Asp Ala Ile Asp Gln Leu
115 120 125

Asn Pro Ala Tyr
130

<210> 11
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<213> Bacteriophage Q-beta

<400> 11

Met Ala Lys Leu Glu Thr Val Thr Leu Gly Asn Ile Gly Lys Asp Gly
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Lys Gln Thr Leu Val Leu Asn Pro Arg Gly Val Asn Pro Thr Asn Gly
20 25 30

Val Ala Ser Leu Ser Gln Ala Gly Ala Val Pro Ala Leu Glu Lys Arg
35 40 45

Val Thr Val Ser Val Ser Gln Pro Ser Arg Asn Arg Lys Asn Tyr Lys
50 55 60

Val Gln Val Lys Ile Gln Asn Pro Thr Ala Cys Thr Ala Asn Gly Ser
65 70 75 80

Cys Asp Pro Ser Val Thr Arg Gln Ala Tyr Ala Asp Val Thr Phe Ser
85 90 95

Phe Thr Gln Tyr Ser Thr Asp Glu Glu Arg Ala Phe Val Arg Thr Glu
100 105 110

Leu Ala Ala Leu Leu Ala Ser Pro Leu Leu Ile Asp Ala Ile Asp Gln
115 120 125

Leu Asn Pro Ala Tyr Trp Leu Leu Ile Ala Gly Gly Gly Ser Gly Ser
130 135 140

Lys Pro Asp Pro Val Ile Pro Asp Pro Pro Ile Asp Pro Pro Pro Gly
145 150 155 160

Thr Gly Lys Tyr Thr Cys Pro Phe Ala Ile Trp Ser Leu Glu Glu Val
165 170 175

Tyr Glu Pro Pro Thr Lys Asn Arg Pro Trp Pro Ile Tyr Asn Ala Val
180 185 190

Glu Leu Gln Pro Arg Glu Phe Asp Val Ala Leu Lys Asp Leu Leu Gly

195 200 205

Asn Thr Lys Trp Arg Asp Trp Asp Ser Arg Leu Ser Tyr Thr Thr Phe
210 215 220

Arg Gly Cys Arg Gly Asn Gly Tyr Ile Asp Leu Asp Ala Thr Tyr Leu
225 230 235 240

Ala Thr Asp Gln Ala Met Arg Asp Gln Lys Tyr Asp Ile Arg Glu Gly
245 250 255

Lys Lys Pro Gly Ala Phe Gly Asn Ile Glu Arg Phe Ile Tyr Leu Lys
260 265 270

Ser Ile Asn Ala Tyr Cys Ser Leu Ser Asp Ile Ala Ala Tyr His Ala
275 280 285

Asp Gly Val Ile Val Gly Phe Trp Arg Asp Pro Ser Ser Gly Gly Ala
290 295 300

Ile Pro Phe Asp Phe Thr Lys Phe Asp Lys Thr Lys Cys Pro Ile Gln
305 310 315 320

Ala Val Ile Val Val Pro Arg Ala
325

<210> 12
<211> 362
<212> PRT
<213> BK virus

<400> 12

Met Ala Pro Thr Lys Arg Lys Gly Glu Cys Pro Gly Ala Ala Pro Lys
1 5 10 15

Lys Pro Lys Glu Pro Val Gln Val Pro Lys Leu Leu Ile Lys Gly Gly
20 25 30

Val Glu Val Leu Glu Val Lys Thr Gly Val Asp Ala Ile Thr Glu Val
35 40 45

Glu Cys Phe Leu Asn Pro Glu Met Gly Asp Pro Asp Asp Asn Leu Arg
50 55 60

Gly Tyr Ser Gln His Leu Ser Ala Glu Asn Ala Phe Glu Ser Asp Ser
65 70 75 80

Pro Asp Arg Lys Met Leu Pro Cys Tyr Ser Thr Ala Arg Ile Pro Leu
85 90 95

Pro Asn Leu Asn Glu Asp Leu Thr Cys Gly Asn Leu Leu Met Trp Glu
100 105 110

Ala Val Thr Val Lys Thr Glu Val Ile Gly Ile Thr Ser Met Leu Asn
115 120 125

Leu His Ala Gly Ser Gln Lys Val His Glu Asn Gly Gly Gly Lys Pro
130 135 140

Val Gln Gly Ser Asn Phe His Phe Phe Ala Val Gly Gly Asp Pro Leu
145 150 155 160

Glu Met Gln Gly Val Leu Met Asn Tyr Arg Thr Lys Tyr Pro Gln Gly
165 170 175

Thr Ile Thr Pro Lys Asn Pro Thr Ala Gln Ser Gln Val Met Asn Thr
180 185 190

Asp His Lys Ala Tyr Leu Asp Lys Asn Asn Ala Tyr Pro Val Glu Cys
195 200 205

Trp Ile Pro Asp Pro Ser Arg Asn Glu Asn Thr Arg Tyr Phe Gly Thr
210 215 220

Tyr Thr Gly Gly Glu Asn Val Pro Pro Val Leu His Val Thr Asn Thr
225 230 235 240

Ala Thr Thr Val Leu Leu Asp Glu Gln Gly Val Gly Pro Leu Cys Lys
245 250 255

Ala Asp Ser Leu Tyr Val Ser Ala Ala Asp Ile Cys Gly Leu Phe Thr
260 265 270

Asn Ser Ser Gly Thr Gln Gln Trp Arg Gly Leu Ala Arg Tyr Phe Lys
275 280 285

Ile Arg Leu Arg Lys Arg Ser Val Lys Asn Pro Tyr Pro Ile Ser Phe
290 295 300

Leu Leu Ser Asp Leu Ile Asn Arg Arg Thr Gln Lys Val Asp Gly Gln
305 310 315 320

Pro Met Tyr Gly Met Glu Ser Gln Val Glu Glu Val Arg Val Phe Asp
325 330 335

Gly Thr Glu Gln Leu Pro Gly Asp Pro Asp Met Ile Arg Tyr Ile Asp
340 345 350

Arg Gln Gly Gln Leu Gln Thr Lys Met Val
355 360

<210> 13
<211> 130
<212> PRT
<213> Bacteriophage fr

<400> 13

Met Ala Ser Asn Phe Glu Glu Phe Val Leu Val Asp Asn Gly Gly Thr
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Gly Asp Val Lys Val Ala Pro Ser Asn Phe Ala Asn Gly Val Ala Glu
20 25 30

Trp Ile Ser Ser Asn Ser Arg Ser Gln Ala Tyr Lys Val Thr Cys Ser
35 40 45

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Val Arg Gln Ser Ser Ala Asn Asn Arg Lys Tyr Thr Val Lys Val Glu
    50                  55                  60

Val Pro Lys Val Ala Thr Gln Val Gln Gly Gly Val Glu Leu Pro Val
65                  70                  75                  80

Ala Ala Trp Arg Ser Tyr Met Asn Met Glu Leu Thr Ile Pro Val Phe
                85                  90                  95

Ala Thr Asn Asp Asp Cys Ala Leu Ile Val Lys Ala Leu Gln Gly Thr
            100                 105                 110

Phe Lys Thr Gly Asn Pro Ile Ala Thr Ala Ile Ala Ala Asn Ser Gly
        115                 120                 125

Ile Tyr
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<210> 14
<211> 130
<212> PRT
<213> Bacteriophage GA

<400> 14

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Asn Val Thr Val Val Pro Val Ser Asn Ala Asn Gly Val Ala Glu Trp
            20                  25                  30

Leu Ser Asn Asn Ser Arg Ser Gln Ala Tyr Arg Val Thr Ala Ser Tyr
        35                  40                  45

Arg Ala Ser Gly Ala Asp Lys Arg Lys Tyr Ala Ile Lys Leu Glu Val
    50                  55                  60

Pro Lys Ile Val Thr Gln Val Val Asn Gly Val Glu Leu Pro Gly Ser
65                  70                  75                  80

Ala Trp Lys Ala Tyr Ala Ser Ile Asp Leu Thr Ile Pro Ile Phe Ala
                85                  90                  95

Ala Thr Asp Asp Val Thr Val Ile Ser Lys Ser Leu Ala Gly Leu Phe
            100                 105                 110

Lys Val Gly Asn Pro Ile Ala Glu Ala Ile Ser Ser Gln Ser Gly Phe
        115                 120                 125

Tyr Ala
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<220>
<223> HBCAg containing p33 from LCMV

<220>
<221> CDS
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Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu
1 5 10 15

tcg ttt ttg cct tct gac ttc ttt cct tcc gtc aga gat ctc cta gac 96
Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp
20 25 30

acc gcc tca gct ctg tat cga gaa gcc tta gag tct cct gag cat tgc 144
Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys
35 40 45

tca cct cac cat act gca ctc agg caa gcc att ctc tgc tgg ggg gaa 192
Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu
50 55 60

ttg atg act cta gct acc tgg gtg ggt aat aat ttg gaa gat cca gca 240
Leu Met Thr Leu Ala Thr Trp Val Gly Asn Asn Leu Glu Asp Pro Ala
65 70 75 80

tcc agg gat cta gta gtc aat tat gtt aat act aac atg ggt tta aag 288
Ser Arg Asp Leu Val Val Asn Tyr Val Asn Thr Asn Met Gly Leu Lys
85 90 95

atc agg caa cta ttg tgg ttt cat ata tct tgc ctt act ttt gga aga 336
Ile Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg
100 105 110

gag act gta ctt gaa tat ttg gtc tct ttc gga gtg tgg att cgc act 384
Glu Thr Val Leu Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr
115 120 125

cct cca gcc tat aga cca cca aat gcc cct atc tta tca aca ctt ccg 432
Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
130 135 140

gaa act act gtt gtt aga cga cgg gac cga ggc agg tcc cct aga aga 480
Glu Thr Thr Val Val Arg Arg Arg Asp Arg Gly Arg Ser Pro Arg Arg
145 150 155 160

aga act ccc tcg cct cgc aga cgc aga tct caa tcg ccg cgt cgc aga 528
Arg Thr Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg
165 170 175

aga tct caa tct cgg gaa tct caa tgt ctt ctc ctt aaa gct gtt tac 576
Arg Ser Gln Ser Arg Glu Ser Gln Cys Leu Leu Leu Lys Ala Val Tyr
180 185 190

aac ttc gct acc atg taa 594
Asn Phe Ala Thr Met
195

<210> 16
<211> 197
<212> PRT
<213> Artificial Sequence

<220>
<223> HBCAg containing p33 from LCMV

<400> 16

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu
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Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp
20 25 30

Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys
35 40 45

Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu
50 55 60

Leu Met Thr Leu Ala Thr Trp Val Gly Asn Asn Leu Glu Asp Pro Ala
65 70 75 80

Ser Arg Asp Leu Val Val Asn Tyr Val Asn Thr Asn Met Gly Leu Lys
85 90 95

Ile Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg
100 105 110

Glu Thr Val Leu Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr
115 120 125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
130 135 140

Glu Thr Thr Val Val Arg Arg Arg Asp Arg Gly Arg Ser Pro Arg Arg
145 150 155 160

Arg Thr Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg
165 170 175

Arg Ser Gln Ser Arg Glu Ser Gln Cys Leu Leu Leu Lys Ala Val Tyr
180 185 190

Asn Phe Ala Thr Met
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<210> 17
<211> 246
<212> DNA
<213> Artificial Sequence

<220>
<223> dsDNA fragment for packaging and stabilization of BKV

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tacacatcca ttcatcatgg tgtggtggag gttgacgccg ctgtcacccc agaggagcgc 120

cacctgtcca agatgcagca gaacggctac gaaaatccaa cctacaagtt ctttgagcag 180

atgcagaacg ctagctatcc atacgatgtc cctgattacg cctaacgcga attcgccagc 240

acagtg 246

<210> 18
<211> 5
<212> PRT
<213> Artificial Sequence

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<223> GGKGG Linker

<400> 18

Gly Gly Lys Gly Gly

1 5

<210> 19
<211> 128
<212> PRT
<213> Bacteriophage PP7

<400> 19

Met Ser Lys Thr Ile Val Leu Ser Val Gly Glu Ala Thr Arg Thr Leu
1 5 10 15

Thr Glu Ile Gln Ser Thr Ala Asp Arg Gln Ile Phe Glu Glu Lys Val
20 25 30

Gly Pro Leu Val Gly Arg Leu Arg Leu Thr Ala Ser Leu Arg Gln Asn
35 40 45

Gly Ala Lys Thr Ala Tyr Arg Val Asn Leu Lys Leu Asp Gln Ala Asp
50 55 60

Val Val Asp Cys Ser Thr Ser Val Cys Gly Glu Leu Pro Lys Val Arg
65 70 75 80

Tyr Thr Gln Val Trp Ser His Asp Val Thr Ile Val Ala Asn Ser Thr
85 90 95

Glu Ala Ser Arg Lys Ser Leu Tyr Asp Leu Thr Lys Ser Leu Val Ala
100 105 110

Thr Ser Gln Val Glu Asp Leu Val Val Asn Leu Val Pro Leu Gly Arg
115 120 125

<210> 20
<211> 132
<212> PRT
<213> Bacteriophage Q-beta

<400> 20

Ala Lys Leu Glu Thr Val Thr Leu Gly Asn Ile Gly Arg Asp Gly Lys
1 5 10 15

Gln Thr Leu Val Leu Asn Pro Arg Gly Val Asn Pro Thr Asn Gly Val
20 25 30

Ala Ser Leu Ser Gln Ala Gly Ala Val Pro Ala Leu Glu Lys Arg Val
35 40 45

Thr Val Ser Val Ser Gln Pro Ser Arg Asn Arg Lys Asn Tyr Lys Val
50 55 60

Gln Val Lys Ile Gln Asn Pro Thr Ala Cys Thr Ala Asn Gly Ser Cys
65 70 75 80

Asp Pro Ser Val Thr Arg Gln Lys Tyr Ala Asp Val Thr Phe Ser Phe
85 90 95

Thr Gln Tyr Ser Thr Asp Glu Glu Arg Ala Phe Val Arg Thr Glu Leu
100 105 110

Ala Ala Leu Leu Ala Ser Pro Leu Leu Ile Asp Ala Ile Asp Gln Leu
115 120 125

Asn Pro Ala Tyr
130

<210> 21
<211> 132
<212> PRT
<213> Bacteriophage Q-beta

<400> 21

Ala Lys Leu Glu Thr Val Thr Leu Gly Lys Ile Gly Lys Asp Gly Lys
1 5 10 15

Gln Thr Leu Val Leu Asn Pro Arg Gly Val Asn Pro Thr Asn Gly Val
20 25 30

Ala Ser Leu Ser Gln Ala Gly Ala Val Pro Ala Leu Glu Lys Arg Val
35 40 45

Thr Val Ser Val Ser Gln Pro Ser Arg Asn Arg Lys Asn Tyr Lys Val
50 55 60

Gln Val Lys Ile Gln Asn Pro Thr Ala Cys Thr Ala Asn Gly Ser Cys
65 70 75 80

Asp Pro Ser Val Thr Arg Gln Lys Tyr Ala Asp Val Thr Phe Ser Phe
85 90 95

Thr Gln Tyr Ser Thr Asp Glu Glu Arg Ala Phe Val Arg Thr Glu Leu
100 105 110

Ala Ala Leu Leu Ala Ser Pro Leu Leu Ile Asp Ala Ile Asp Gln Leu
115 120 125

Asn Pro Ala Tyr
130

<210> 22
<211> 132
<212> PRT
<213> Bacteriophage Q-beta

<400> 22

Ala Arg Leu Glu Thr Val Thr Leu Gly Asn Ile Gly Arg Asp Gly Lys
1 5 10 15

Gln Thr Leu Val Leu Asn Pro Arg Gly Val Asn Pro Thr Asn Gly Val
20 25 30

Ala Ser Leu Ser Gln Ala Gly Ala Val Pro Ala Leu Glu Lys Arg Val
35 40 45

Thr Val Ser Val Ser Gln Pro Ser Arg Asn Arg Lys Asn Tyr Lys Val
50 55 60

Gln Val Lys Ile Gln Asn Pro Thr Ala Cys Thr Ala Asn Gly Ser Cys

65 70 75 80

Asp Pro Ser Val Thr Arg Gln Lys Tyr Ala Asp Val Thr Phe Ser Phe
85 90 95

Thr Gln Tyr Ser Thr Asp Glu Glu Arg Ala Phe Val Arg Thr Glu Leu
100 105 110

Ala Ala Leu Leu Ala Ser Pro Leu Leu Ile Asp Ala Ile Asp Gln Leu
115 120 125

Asn Pro Ala Tyr
130

<210> 23
<211> 132
<212> PRT
<213> Bacteriophage Q-beta

<400> 23

Ala Lys Leu Glu Thr Val Thr Leu Gly Asn Ile Gly Lys Asp Gly Arg
1 5 10 15

Gln Thr Leu Val Leu Asn Pro Arg Gly Val Asn Pro Thr Asn Gly Val
20 25 30

Ala Ser Leu Ser Gln Ala Gly Ala Val Pro Ala Leu Glu Lys Arg Val
35 40 45

Thr Val Ser Val Ser Gln Pro Ser Arg Asn Arg Lys Asn Tyr Lys Val
50 55 60

Gln Val Lys Ile Gln Asn Pro Thr Ala Cys Thr Ala Asn Gly Ser Cys
65 70 75 80

Asp Pro Ser Val Thr Arg Gln Lys Tyr Ala Asp Val Thr Phe Ser Phe
85 90 95

Thr Gln Tyr Ser Thr Asp Glu Glu Arg Ala Phe Val Arg Thr Glu Leu
100 105 110

Ala Ala Leu Leu Ala Ser Pro Leu Leu Ile Asp Ala Ile Asp Gln Leu
115 120 125

Asn Pro Ala Tyr
130

<210> 24
<211> 132
<212> PRT
<213> Bacteriophage Q-beta

<400> 24

Ala Arg Leu Glu Thr Val Thr Leu Gly Asn Ile Gly Lys Asp Gly Arg
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Gln Thr Leu Val Leu Asn Pro Arg Gly Val Asn Pro Thr Asn Gly Val
20 25 30

Ala Ser Leu Ser Gln Ala Gly Ala Val Pro Ala Leu Glu Lys Arg Val
35 40 45

Thr Val Ser Val Ser Gln Pro Ser Arg Asn Arg Lys Asn Tyr Lys Val
50 55 60

Gln Val Lys Ile Gln Asn Pro Thr Ala Cys Thr Ala Asn Gly Ser Cys
65 70 75 80

Asp Pro Ser Val Thr Arg Gln Lys Tyr Ala Asp Val Thr Phe Ser Phe
85 90 95

Thr Gln Tyr Ser Thr Asp Glu Glu Arg Ala Phe Val Arg Thr Glu Leu
100 105 110

Ala Ala Leu Leu Ala Ser Pro Leu Leu Ile Asp Ala Ile Asp Gln Leu
115 120 125

Asn Pro Ala Tyr
130

<210> 25
<211> 184
<212> PRT
<213> Hepatitis B virus

<400> 25

Met Asp Ile Asp Pro Tyr Glu Phe Gly Ala Thr Val Glu Leu Leu Ser
1 5 10 15

Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp Thr
20 25 30

Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys Ser
35 40 45

Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu Leu
50 55 60

Met Thr Leu Ala Thr Trp Val Gly Asn Asn Leu Glu Asp Pro Ala Ser
65 70 75 80

Arg Asp Leu Val Val Asn Tyr Val Asn Thr Asn Met Gly Leu Lys Ile
85 90 95

Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg Glu
100 105 110

Thr Val Leu Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr Pro
115 120 125

Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro Glu
130 135 140

Thr Thr Val Val Arg Arg Arg Asp Arg Gly Arg Ser Pro Arg Arg Arg
145 150 155 160

Thr Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Arg
165 170 175

Ser Gln Ser Arg Glu Ser Gln Cys
180

<210> 26
<211> 213
<212> PRT
<213> Hepatitis B virus

<400> 26

Met Gln Leu Phe His Leu Cys Leu Ile Ile Ser Cys Ser Cys Pro Thr
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Val Gln Ala Ser Lys Leu Cys Leu Gly Trp Leu Trp Gly Met Asp Ile
20 25 30

Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu Ser Phe Leu
35 40 45

Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp Thr Ala Ser
50 55 60

Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys Ser Pro His
65 70 75 80

His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Asp Leu Met Asn
85 90 95

Leu Ala Thr Trp Val Gly Gly Asn Leu Glu Asp Pro Val Ser Arg Asp
100 105 110

Leu Val Val Gly Tyr Val Asn Thr Thr Val Gly Leu Lys Phe Arg Gln
115 120 125

Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg Glu Thr Val
130 135 140

Ile Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr Pro Pro Ala
145 150 155 160

Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro Glu Thr Thr
165 170 175

Val Val Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr Pro Ser Pro
180 185 190

Pro Arg Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Arg Ser Gln Ser
195 200 205

Arg Glu Ser Gln Cys
210

<210> 27
<211> 188
<212> PRT
<213> Hepatitis B virus

<400> 27

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ser Ser Tyr Gln Leu Leu
1 5 10 15

Asn Phe Leu Pro Leu Asp Phe Phe Pro Asp Leu Asn Ala Leu Val Asp
20 25 30

Thr Ala Thr Ala Leu Tyr Glu Glu Glu Leu Thr Gly Arg Glu His Cys
35 40 45

Ser Pro His His Thr Ala Ile Arg Gln Ala Leu Val Cys Trp Asp Glu
50 55 60

Leu Thr Lys Leu Ile Ala Trp Met Ser Ser Asn Ile Thr Ser Glu Gln
65 70 75 80

Val Arg Thr Ile Ile Val Asn His Val Asn Asp Thr Trp Gly Leu Lys
85 90 95

Val Arg Gln Ser Leu Trp Phe His Leu Ser Cys Leu Thr Phe Gly Gln
100 105 110

His Thr Val Gln Glu Phe Leu Val Ser Phe Gly Val Trp Ile Arg Thr
115 120 125

Pro Ala Pro Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
130 135 140

Glu His Thr Val Ile Arg Arg Arg Gly Gly Ala Arg Ala Ser Arg Ser
145 150 155 160

Pro Arg Arg Arg Thr Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro
165 170 175

Arg Arg Arg Arg Ser Gln Ser Pro Ser Thr Asn Cys
180 185

<210> 28
<211> 185
<212> PRT
<213> Hepatitis B virus

<400> 28

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu
1 5 10 15

Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp
20 25 30

Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys
35 40 45

Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu
50 55 60

Leu Met Thr Leu Ala Thr Trp Val Gly Asn Asn Leu Glu Asp Pro Ala
65 70 75 80

Ser Arg Asp Leu Val Val Asn Tyr Val Asn Thr Asn Met Gly Leu Lys
85 90 95

Ile Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg
100 105 110

Glu Thr Val Leu Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr
115 120 125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
130 135 140

Glu Thr Thr Val Val Arg Arg Arg Asp Arg Gly Arg Ser Pro Arg Arg
145 150 155 160

Arg Thr Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg
165 170 175

Arg Ser Gln Ser Arg Glu Ser Gln Cys
180 185

<210> 29
<211> 152
<212> PRT
<213> Hepatitis B virus

<400> 29

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu
1 5 10 15

Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp
20 25 30

Thr Ala Ala Ala Leu Tyr Arg Asp Ala Leu Glu Ser Pro Glu His Cys
35 40 45

Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Asp
50 55 60

Leu Met Thr Leu Ala Thr Trp Val Gly Thr Asn Leu Glu Asp Gly Gly
65 70 75 80

Lys Gly Gly Ser Arg Asp Leu Val Val Ser Tyr Val Asn Thr Asn Val
85 90 95

Gly Leu Lys Phe Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr
100 105 110

Phe Gly Arg Glu Thr Val Leu Glu Tyr Leu Val Ser Phe Gly Val Trp
115 120 125

Ile Arg Thr Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser
130 135 140

Thr Leu Pro Glu Thr Thr Val Val
145 150

<210> 30
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<212> DNA
<213> Artificial Sequence

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<223> plasmid pAP283-58

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ggaaaatcac atggcaaata agccaatgca accgatcaca tctacagcaa ataaaattgt 180
gtggtcggat ccaactcgtt tatcaactac attttcagca agtctgttac gccaacgtgt 240
taaagttggt atagccgaac tgaataatgt ttcaggtcaa tatgtatctg tttataagcg 300
tcctgcacct aaaccggaag gttgtgcaga tgcctgtgtc attatgccga atgaaaacca 360
atccattcgc acagtgattt cagggtcagc cgaaaacttg gctaccttaa aagcagaatg 420
ggaaactcac aaacgtaacg ttgacacact cttcgcgagc ggcaacgccg gtttgggttt 480
ccttgaccct actgcggcta tcgtatcgtc tgatactact gcttaagctt gtattctata 540
gtgtcaccta aatcgtatgt gtatgataca taaggttatg tattaattgt agccgcgttc 600
taacgacaat atgtacaagc ctaattgtgt agcatctggc ttactgaagc agaccctatc 660
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<211> 131
<212> PRT
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<220>
<223> AP205 coat protein

<400> 31

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Val Trp Ser Asp Pro Thr Arg Leu Ser Thr Thr Phe Ser Ala Ser Leu
20 25 30

Leu Arg Gln Arg Val Lys Val Gly Ile Ala Glu Leu Asn Asn Val Ser
35 40 45

Gly Gln Tyr Val Ser Val Tyr Lys Arg Pro Ala Pro Lys Pro Glu Gly
50 55 60

Cys Ala Asp Ala Cys Val Ile Met Pro Asn Glu Asn Gln Ser Ile Arg
65 70 75 80

Thr Val Ile Ser Gly Ser Ala Glu Asn Leu Ala Thr Leu Lys Ala Glu
85 90 95

Trp Glu Thr His Lys Arg Asn Val Asp Thr Leu Phe Ala Ser Gly Asn
100 105 110

Ala Gly Leu Gly Phe Leu Asp Pro Thr Ala Ala Ile Val Ser Ser Asp
115 120 125

Thr Thr Ala
130

<210> 32
<211> 131
<212> PRT
<213> Artificial Sequence

<220>
<223> AP205 coat protein

<400> 32

Met Ala Asn Lys Thr Met Gln Pro Ile Thr Ser Thr Ala Asn Lys Ile
1 5 10 15

Val Trp Ser Asp Pro Thr Arg Leu Ser Thr Thr Phe Ser Ala Ser Leu
20 25 30

Leu Arg Gln Arg Val Lys Val Gly Ile Ala Glu Leu Asn Asn Val Ser
35 40 45

Gly Gln Tyr Val Ser Val Tyr Lys Arg Pro Ala Pro Lys Pro Glu Gly
50 55 60

Cys Ala Asp Ala Cys Val Ile Met Pro Asn Glu Asn Gln Ser Ile Arg
65 70 75 80

Thr Val Ile Ser Gly Ser Ala Glu Asn Leu Ala Thr Leu Lys Ala Glu
85 90 95

Trp Glu Thr His Lys Arg Asn Val Asp Thr Leu Phe Ala Ser Gly Asn
100 105 110

Ala Gly Leu Gly Phe Leu Asp Pro Thr Ala Ala Ile Val Ser Ser Asp
115 120 125

Thr Thr Ala
130

<210> 33
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<220>
<223> CyCpGpt

<400> 34
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<210> 35
<211> 21
<212> DNA
<213> Artificial sequence

<220>
<223> CyCpG

<400> 35
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<210> 36
<211> 20
<212> DNA
<213> Artificial sequence

<220>
<223> B-CpGpt

<400> 36
tccatgacgt tcctgacgtt 20

<210> 37
<211> 20
<212> DNA
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<220>
<223> B-CpG

<400> 37
tccatgacgt tcctgacgtt 20

<210> 38
<211> 19
<212> DNA
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<220>
<223> NKCpGpt

<400> 38
ggggtcaacg ttgaggggg 19

<210> 39
<211> 19
<212> DNA
<213> Artificial sequence

<220>
<223> NKCpG

<400> 39
ggggtcaacg ttgaggggg 19

<210> 40
<211> 21
<212> DNA
<213> Artificial sequence

<220>
<223> CyCpG-rev-pt

<400> 40
attattcagg aacgtcatgg a 21

<210> 41
<211> 30
<212> DNA
<213> Artificial sequence

<220>
<223> g10gacga-PO (G10-PO)

<400> 41
gggggggggg gacgatcgtc gggggggggg 30

<210> 42
<211> 30
<212> DNA
<213> Artificial sequence

<220>
<223> g10gacga-PS

<400> 42
gggggggggg gacgatcgtc gggggggggg 30

<210> 43
<211> 62
<212> DNA
<213> Artificial sequence

<220>
<223> (CPG) 20OpA

<400> 43
cgcgcgcgcg cgcgcgcgcg cgcgcgcgcg cgcgcgcgcg aaatgcatgt caaagacagc 60

at 62

<210> 44
<211> 61
<212> DNA
<213> Artificial sequence

<220>
<223> Cy (CpG) 20

<400> 44
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g 61

<210> 45
<211> 83
<212> DNA
<213> Artificial sequence

<220>
<223> Cy (CpG) 20-OpA

<400> 45
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gaaatgcatg tcaaagacag cat 83

<210> 46
<211> 43
<212> DNA
<213> Artificial sequence

<220>
<223> CyOpA

<400> 46
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<210> 47
<211> 63
<212> DNA
<213> Artificial sequence

<220>
<223> CyCyCy

<400> 47
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<210> 48
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<212> DNA
<213> Artificial sequence

<220>
<223> Cy150-1

<400> 48
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aattggatga cgttggtgaa taattccatg acgttcctga ataattccat gacgttcctg 120

aataattcca tgacgttcct gaataattcc 150

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<211> 253
<212> DNA
<213> Artificial sequence

<220>
<223> dsCyCpG-253

<400> 49
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atgacgttgg tgaataattc catgacgttc ctgaataatt ccatgacgtt cctgaataat 120

tccatgacgt tcctgaataa ttccatgacg ttcctgaata attccatgac gttcctgaat 180

aattccatga cgttcctgaa taattccatg acgttcctga aaattccaat caagcttatc 240

gataccgtcg acc 253

<210> 50
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> sequence of vector pAb185

<400> 50
tctagattaa cccaacgcgt aggagtcagg ccatg 35

<210> 51
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> N terminal glycine serine linkers

<220>
<221> REPEAT
<222> (1)..(1)
<223> Glycine can be repeated from zero to five times

<220>
<221> REPEAT
<222> (3)..(3)
<223> Glycine can be repeated from zero to ten times

<220>
<221> REPEAT
<222> (4)..(4)
<223> Serine can be repeated from zero to two times

<220>
<221> REPEAT
<222> (5)..(9)
<223> These residues can be repeated from zero to three times as a

group

<400> 51

Gly Cys Gly Ser Gly Gly Gly Gly Ser
1 5

<210> 52
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> C terminal glycine serine linkers

<220>
<221> REPEAT
<222> (1)..(1)
<223> Glycine can be repeated from zero to ten times

<220>
<221> REPEAT
<222> (2)..(2)
<223> Serine can be repeated from zero to two times

<220>
<221> REPEAT
<222> (3)..(7)
<223> These residues can be repeated from zero to three times as a group

<220>
<221> REPEAT
<222> (8)..(8)
<223> Glycine can be repeated from zero to eight times

<220>
<221> REPEAT
<222> (10)..(10)
<223> Glycine can be repeated from zero to five times

<400> 52

Gly Ser Gly Gly Gly Gly Ser Gly Cys Gly
1 5 10

<210> 53
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Glycine serine linker

<400> 53

Gly Gly Gly Gly Ser
1 5

<210> 54
<211> 10
<212> PRT
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<220>
<223> N-terminal gamma1

<400> 54

Cys Gly Asp Lys Thr His Thr Ser Pro Pro
1 5 10

<210> 55
<211> 10
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<220>
<223> C-terminal gamma 1

<400> 55

Asp Lys Thr His Thr Ser Pro Pro Cys Gly
1 5 10

<210> 56
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> N-terminal gamma 3

<400> 56

Cys Gly Gly Pro Lys Pro Ser Thr Pro Pro Gly Ser Ser Gly Gly Ala
1 5 10 15

Pro

<210> 57
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> C-terminal gamma 3

<400> 57

Pro Lys Pro Ser Thr Pro Pro Gly Ser Ser Gly Gly Ala Pro Gly Gly
1 5 10 15

Cys Gly

<210> 58
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> N-terminal glycine linker

<400> 58

Gly Cys Gly Gly Gly Gly
1 5

<210> 59
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> C-terminal glycine linker

<400> 59

Gly Gly Gly Gly Cys Gly

1 5

<210> 60
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> C-terminal glycine-lysine linker

<400> 60

Gly Gly Lys Lys Gly Cys
1 5

<210> 61
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> N-terminal glycine-lysine linker

<400> 61

Cys Gly Lys Lys Gly Gly
1 5

<210> 62
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> N-terminal linker 1

<400> 62

Cys Gly Lys Lys Gly Gly
1 5

<210> 63
<211> 6
<212> PRT
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<220>
<223> N-terminal linker 2

<400> 63

Cys Gly Asp Glu Gly Gly
1 5

<210> 64
<211> 6
<212> PRT
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<220>
<223> C-terminal liker

<400> 64

Gly Gly Lys Lys Gly Cys
1 5

<210> 65
<211> 6
<212> PRT

<213> Artificial Sequence

<220>
<223> C-terminal linker 2

<400> 65

Gly Gly Glu Asp Gly Cys
1 5

<210> 66
<211> 4
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<213> Artificial Sequence

<220>
<223> C-terminal linker 3

<400> 66

Gly Gly Cys Gly
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<210> 67
<211> 9
<212> PRT
<213> Homo sapiens

<400> 67

Lys Ala Val Tyr Asn Phe Ala Thr Met
1 5

<210> 68
<211> 12
<212> PRT
<213> Homo sapiens

<400> 68

Cys Gly Gly Lys Ala Val Tyr Asn Phe Ala Thr Met
1 5 10

<210> 69
<211> 12
<212> PRT
<213> Homo sapiens

<400> 69

Lys Ala Val Tyr Asn Phe Ala Thr Met Gly Gly Cys
1 5 10

<210> 70
<211> 18
<212> PRT
<213> Homo sapiens

<400> 70

Cys Gly Gly Gly Ser Glu Glu Ile Arg Ser Leu Tyr Asn Thr Val Ala
1 5 10 15

Thr Leu

<210> 71
<211> 50
<212> PRT

<213> Artificial Sequence

<220>
<223> HIV Gag-G50

<400> 71

Cys Gln Gly Gln Met Val His Gln Ala Ile Ser Pro Arg Thr Leu Asn
1 5 10 15

Ala Trp Val Lys Ala Phe Ser Pro Glu Val Ile Pro Met Phe Ser Ala
20 25 30

Leu Ser Glu Gly Ala Thr Pro Gln Asp Leu Asn Thr Met Leu Asn Thr
35 40 45

Val Lys
50

<210> 72
<211> 56
<212> PRT
<213> Artificial Sequence

<220>
<223> HIV Nef-N56

<400> 72

Cys Gly Val Gly Phe Pro Val Arg Pro Gln Val Pro Leu Arg Pro Met
1 5 10 15

Thr Tyr Lys Ala Ala Val Asp Leu Ser His Phe Leu Lys Glu Lys Gly
20 25 30

Gly Leu Glu Gly Pro Gly Ile Arg Tyr Pro Leu Thr Phe Gly Trp Cys
35 40 45

Phe Lys Leu Val Pro Val Glu Pro
50 55

<210> 73
<211> 69
<212> PRT
<213> Artificial Sequence

<220>
<223> Gag-G68n

<400> 73

Cys Gly Glu Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys Ile
1 5 10 15

Val Arg Met Tyr Gln Gly Gln Met Val His Gln Ala Ile Ser Pro Arg
20 25 30

Thr Leu Asn Ala Trp Val Lys Ala Phe Ser Pro Glu Val Ile Pro Met
35 40 45

Phe Ser Ala Leu Ser Glu Gly Ala Thr Pro Gln Asp Leu Asn Thr Met
50 55 60

Leu Asn Thr Val Lys

65

<210> 74
<211> 9
<212> PRT
<213> Homo sapiens

<400> 74

Leu Pro Tyr Leu Gly Trp Leu Val Phe
1 5

<210> 75
<211> 206
<212> PRT
<213> Human immunodeficiency virus

<400> 75

Met Gly Gly Lys Trp Ser Lys Arg Ser Val Val Gly Trp Pro Thr Val
1 5 10 15

Arg Glu Arg Met Arg Arg Ala Glu Pro Ala Ala Asp Gly Val Gly Ala
20 25 30

Val Ser Arg Asp Leu Glu Lys His Gly Ala Ile Thr Ser Ser Asn Thr
35 40 45

Ala Ala Asn Asn Ala Asp Cys Ala Trp Leu Glu Ala Gln Glu Glu Glu
50 55 60

Glu Val Gly Phe Pro Val Arg Pro Gln Val Pro Leu Arg Pro Met Thr
65 70 75 80

Tyr Lys Ala Ala Val Asp Leu Ser His Phe Leu Lys Glu Lys Gly Gly
85 90 95

Leu Glu Gly Leu Ile Tyr Ser Gln Lys Arg Gln Asp Ile Leu Asp Leu
100 105 110

Trp Val Tyr His Thr Gln Gly Tyr Phe Pro Asp Trp Gln Asn Tyr Thr
115 120 125

Pro Gly Pro Gly Ile Arg Tyr Pro Leu Thr Phe Gly Trp Cys Phe Lys
130 135 140

Leu Val Pro Val Glu Pro Glu Lys Val Glu Glu Ala Asn Glu Gly Glu
145 150 155 160

Asn Asn Ser Leu Leu His Pro Met Ser Leu His Gly Met Asp Asp Pro
165 170 175

Glu Arg Glu Val Leu Val Trp Lys Phe Asp Ser Arg Leu Ala Phe His
180 185 190

His Met Ala Arg Glu Leu His Pro Glu Tyr Tyr Lys Asp Cys
195 200 205

<210> 76
<211> 500
<212> PRT

<213> Human immunodeficiency virus

<400> 76

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Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys Lys Tyr Lys Leu Lys
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His Ile Val Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Val Asn Pro
        35                  40                  45

Gly Leu Leu Glu Thr Ser Glu Gly Cys Arg Gln Ile Leu Gly Gln Leu
    50                  55                  60

Gln Pro Ser Leu Gln Thr Gly Ser Glu Glu Leu Arg Ser Leu Tyr Asn
65                  70                  75                  80

Thr Val Ala Thr Leu Tyr Cys Val His Gln Lys Ile Glu Val Lys Asp
                85                  90                  95

Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Glu Gln Asn Lys Ser Lys
            100                 105                 110

Lys Lys Ala Gln Gln Ala Ala Ala Asp Thr Gly Asn Ser Ser Gln Val
        115                 120                 125

Ser Gln Asn Tyr Pro Ile Val Gln Asn Leu Gln Gly Gln Met Val His
    130                 135                 140

Gln Ala Ile Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Val Glu
145                 150                 155                 160

Glu Lys Ala Phe Ser Pro Glu Val Ile Pro Met Phe Ser Ala Leu Ser
                165                 170                 175

Glu Gly Ala Thr Pro Gln Asp Leu Asn Thr Met Leu Asn Thr Val Gly
            180                 185                 190

Gly His Gln Ala Ala Met Gln Met Leu Lys Glu Thr Ile Asn Glu Glu
        195                 200                 205

Ala Ala Glu Trp Asp Arg Leu His Pro Val His Ala Gly Pro Ile Ala
    210                 215                 220

Pro Gly Gln Met Arg Glu Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr
225                 230                 235                 240

Ser Thr Leu Gln Glu Gln Ile Gly Trp Met Thr Asn Asn Pro Pro Ile
                245                 250                 255

Pro Val Gly Glu Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys
            260                 265                 270

Ile Val Arg Met Tyr Ser Pro Thr Ser Ile Leu Asp Ile Arg Gln Gly
        275                 280                 285
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Pro Lys Glu Pro Phe Arg Asp Tyr Val Asp Arg Phe Tyr Lys Thr Leu
290 295 300

Arg Ala Glu Gln Ala Ser Gln Glu Val Lys Asn Trp Met Thr Glu Thr
305 310 315 320

Leu Leu Val Gln Asn Ala Asn Pro Asp Cys Lys Thr Ile Leu Lys Ala
325 330 335

Leu Gly Pro Ala Ala Thr Leu Glu Glu Met Met Thr Ala Cys Gln Gly
340 345 350

Val Gly Gly Pro Gly His Lys Ala Arg Val Leu Ala Glu Ala Met Ser
355 360 365

Gln Val Thr Asn Ser Ala Thr Ile Met Met Gln Arg Gly Asn Phe Arg
370 375 380

Asn Gln Arg Lys Thr Val Lys Cys Phe Asn Cys Gly Lys Glu Gly His
385 390 395 400

Ile Ala Lys Asn Cys Arg Ala Pro Arg Lys Lys Gly Cys Trp Lys Cys
405 410 415

Gly Lys Glu Gly His Gln Met Lys Asp Cys Thr Glu Arg Gln Ala Asn
420 425 430

Phe Leu Gly Lys Ile Trp Pro Ser His Lys Gly Arg Pro Gly Asn Phe
435 440 445

Leu Gln Ser Arg Pro Glu Pro Thr Ala Pro Pro Glu Glu Ser Phe Arg
450 455 460

Phe Gly Glu Glu Thr Thr Thr Pro Ser Gln Lys Gln Glu Pro Ile Asp
465 470 475 480

Lys Glu Leu Tyr Pro Leu Ala Ser Leu Arg Ser Leu Phe Gly Asn Asp
485 490 495

Pro Ser Ser Gln
500

<210> 77
<211> 34
<212> PRT
<213> Human immunodeficiency virus

<400> 77

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1 5 10 15

Lys Ala Ala Val Asp Leu Ser His Phe Leu Lys Glu Lys Gly Gly Leu
20 25 30

Glu Gly

<210> 78

<211> 20
<212> PRT
<213> Human immunodeficiency virus

<400> 78

Pro Gly Ile Arg Tyr Pro Leu Thr Phe Gly Trp Cys Phe Lys Leu Val
1 5 10 15

Pro Val Glu Pro
20

<210> 79
<211> 5
<212> PRT
<213> Human immunodeficiency virus

<400> 79

Lys Val Val Glu Glu
1 5

<210> 80
<211> 18
<212> PRT
<213> Human immunodeficiency virus

<400> 80

Gln Gly Gln Met Val His Gln Ala Ile Ser Pro Arg Thr Leu Asn Ala
1 5 10 15

Trp Val

<210> 81
<211> 30
<212> PRT
<213> Human immunodeficiency virus

<400> 81

Lys Ala Phe Ser Pro Glu Val Ile Pro Met Phe Ser Ala Leu Ser Glu
1 5 10 15

Gly Ala Thr Pro Gln Asp Leu Asn Thr Met Leu Asn Thr Val
20 25 30

<210> 82
<211> 19
<212> PRT
<213> Human immunodeficiency virus

<400> 82

Gly Glu Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys Ile Val
1 5 10 15

Arg Met Tyr

<210> 83
<211> 54
<212> PRT
<213> Human immunodeficiency virus

<400> 83

Val Gly Phe Pro Val Arg Pro Gln Val Pro Leu Arg Pro Met Thr Tyr
1 5 10 15

Lys Ala Ala Val Asp Leu Ser His Phe Leu Lys Glu Lys Gly Gly Leu
20 25 30

Glu Gly Pro Gly Ile Arg Tyr Pro Leu Thr Phe Gly Trp Cys Phe Lys
35 40 45

Leu Val Pro Val Glu Pro
50

<210> 84
<211> 48
<212> PRT
<213> Human immunodeficiency virus

<400> 84

Gln Gly Gln Met Val His Gln Ala Ile Ser Pro Arg Thr Leu Asn Ala
1 5 10 15

Trp Val Lys Ala Phe Ser Pro Glu Val Ile Pro Met Phe Ser Ala Leu
20 25 30

Ser Glu Gly Ala Thr Pro Gln Asp Leu Asn Thr Met Leu Asn Thr Val
35 40 45

<210> 85
<211> 49
<212> PRT
<213> Artificial Sequence

<220>
<223> HIV C_Gag-G50

<400> 85

Cys Gln Gly Gln Met Val His Gln Ala Ile Ser Pro Arg Thr Leu Asn
1 5 10 15

Ala Trp Val Lys Ala Phe Ser Pro Glu Val Ile Pro Met Phe Ser Ala
20 25 30

Leu Ser Glu Gly Ala Thr Pro Gln Asp Leu Asn Thr Met Leu Asn Thr
35 40 45

Val

<210> 86
<211> 67
<212> PRT
<213> Human immunodeficiency virus

<400> 86

Gly Glu Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys Ile Val
1 5 10 15

Arg Met Tyr Gln Gly Gln Met Val His Gln Ala Ile Ser Pro Arg Thr
20 25 30

Leu Asn Ala Trp Val Lys Ala Phe Ser Pro Glu Val Ile Pro Met Phe
35 40 45

Ser Ala Leu Ser Glu Gly Ala Thr Pro Gln Asp Leu Asn Thr Met Leu
50 55 60

Asn Thr Val
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<210> 87
<211> 68
<212> PRT
<213> Artificial Sequence

<220>
<223> HIV C_Gag-G68n

<400> 87

Cys Gly Glu Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys Ile
1 5 10 15

Val Arg Met Tyr Gln Gly Gln Met Val His Gln Ala Ile Ser Pro Arg
20 25 30

Thr Leu Asn Ala Trp Val Lys Ala Phe Ser Pro Glu Val Ile Pro Met
35 40 45

Phe Ser Ala Leu Ser Glu Gly Ala Thr Pro Gln Asp Leu Asn Thr Met
50 55 60

Leu Asn Thr Val
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<210> 88
<211> 64
<212> DNA
<213> Artificial Sequence

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<223> Primer gag1nhefo

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cgat 64

<210> 89
<211> 60
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer gag2fo

<400> 89
aggtcagatg gttcatcagg cgatttctcc gcgtaccctg aacgcatggg tgaaagtggt 60

<210> 90
<211> 60
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer gag3fo

<400> 90
aacgcatggg tgaaagtggt ggaagagaaa gcgttctctc cggaagttat cccgatgttc 60

<210> 91
<211> 60
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer i-gag4ba

<400> 91
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<210> 92
<211> 59
<212> DNA
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<220>
<223> Primer i-gag5ba

<400> 92
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<210> 93
<211> 59
<212> DNA
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<220>
<223> Primer gag6fo-b

<400> 93
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<210> 94
<211> 57
<212> DNA
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<220>
<223> Primer gag7fo

<400> 94
cgttggatca ttctgggtct gaacaaaatc gtgcgcatgt actctccgac gtctatc 57

<210> 95
<211> 55
<212> DNA
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<220>
<223> Primer i-gag8ba

<400> 95
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<210> 96
<211> 59
<212> DNA
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<220>
<223> Primer i-gag9-b

<400> 96
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<210> 97
<211> 58
<212> DNA
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<220>
<223> Primer i-gag10b-Notba

<400> 97
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<211> 393
<212> DNA
<213> Artificial Sequence

<220>
<223> GAGorig sequence

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cgatttctcc gcgtaccctg aacgcatggg tgaaagtggt ggaagagaaa gcgttctctc 120

cggaagttat cccgatgttc agcgcactga gcgaaggtgc tactccgcag gatctgaaca 180

ctatgctgaa taccgtgggt aatcctccga ttccggttgg cgaaatttac aaacgttgga 240

tcattctggg tctgaacaaa atcgtgcgca tgtactctcc gacgtctatc ctggatatcc 300

gtcagggtcc taaagaaccg ttccgtgatt acgttgatcg tttctacaaa accctgcgtg 360

ctgaacaggc ttcttaatag cggccgcatg agc 393

<210> 100
<211> 123
<212> PRT
<213> Artificial Sequence

<220>
<223> GAGorig peptide

<400> 100

Leu Ala Gly Cys Gly Pro Ile Val Gln Asn Leu Gln Gly Gln Met Val
1 5 10 15

His Gln Ala Ile Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Val
20 25 30

Glu Glu Lys Ala Phe Ser Pro Glu Val Ile Pro Met Phe Ser Ala Leu
35 40 45

Ser Glu Gly Ala Thr Pro Gln Asp Leu Asn Thr Met Leu Asn Thr Val
50 55 60

Gly Asn Pro Pro Ile Pro Val Gly Glu Ile Tyr Lys Arg Trp Ile Ile
65 70 75 80

Leu Gly Leu Asn Lys Ile Val Arg Met Tyr Ser Pro Thr Ser Ile Leu
85 90 95

Asp Ile Arg Gln Gly Pro Lys Glu Pro Phe Arg Asp Tyr Val Asp Arg
100 105 110

Phe Tyr Lys Thr Leu Arg Ala Glu Gln Ala Ser
115 120

<210> 101
<211> 270
<212> DNA
<213> Artificial Sequence

<220>
<223> 81GAG sequence

<400> 101

40

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tactccgcag gatctgaaca ctatgctgaa taccgtgggt gaaatttaca aacgttggat 180

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gaagaactgg atgtaatagc ggccgcttgg 270

<210> 102
<211> 83
<212> PRT
<213> Artificial Sequence

<220>
<223> 81GAG peptide

<400> 102

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1 5 10 15

Leu Asn Ala Trp Val Lys Ala Phe Ser Pro Glu Val Ile Pro Met Phe
20 25 30

Ser Ala Leu Ser Glu Gly Ala Thr Pro Gln Asp Leu Asn Thr Met Leu
35 40 45

Asn Thr Val Gly Glu Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn
50 55 60

Lys Ile Val Arg Met Tyr Arg Ala Glu Gln Ala Ser Gln Glu Val Lys
65 70 75 80

Asn Trp Met

<210> 103
<211> 89
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer 80gag1nhe

<400> 103
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atgggtgaaa gcgttctctc cggaagtta 89

<210> 104
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer i-80gag2

<400> 104
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<210> 105
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<210> 108
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aactggatga ccgaaactct gctggttcag aacgctaacc cggattgcaa gacca 55

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<223> Primer i-gag6Cba

<400> 112
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<210> 113
<211> 258
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<213> Artificial Sequence

<220>
<223> GagC sequence

<400> 113
gtaagctagc atgcggtccg acgtctatcc tggatatccg tcagggtcct aaagaaccgt 60

tccgtgatta cgttgatcgt ttctacaaaa ccctgcgtgc tgaacaggct tctcaggaag 120

tgaaaaactg gatgaccgaa actctgctgg ttcagaacgc taacccggat tgcaagacca 180

tcctgaaagc tttaggtcca gcagcgaccc tcgaagagat gatgactgct tgccagggtt 240

aatagcggcc gcatgagc 258

<210> 114
<211> 78
<212> PRT
<213> Artificial Sequence

<220>
<223> GagC peptide

<400> 114

Leu Ala Cys Gly Pro Thr Ser Ile Leu Asp Ile Arg Gln Gly Pro Lys
1 5 10 15

Glu Pro Phe Arg Asp Tyr Val Asp Arg Phe Tyr Lys Thr Leu Arg Ala
20 25 30

Glu Gln Ala Ser Gln Glu Val Lys Asn Trp Met Thr Glu Thr Leu Leu
35 40 45

Val Gln Asn Ala Asn Pro Asp Cys Lys Thr Ile Leu Lys Ala Leu Gly
50 55 60

Pro Ala Ala Thr Leu Glu Glu Met Met Thr Ala Cys Gln Gly
65 70 75

<210> 115
<211> 253
<212> DNA
<213> Artificial Sequence

<220>
<223> Nef74 sequence

<400> 115

gcaagctagc tggttgcggt gtgggtttcc cggttcgtcc tcaggttcct ctgcgtccga 60

tgacttacaa agcagctgtt gacctgtctc acttcctgaa agaaaagggt ggcctggaat 120

gggtttacca cacgcagggc tactttccgg attggcagaa ctacactcca ggtccaggta 180

tccgttatcc tctgaccttc ggttggtgtt tcaagctggt gccggttgaa ccgtaatagc 240

ggccgcataa tgt 253

<210> 116
<211> 76
<212> PRT
<213> Artificial Sequence

<220>
<223> Nef74 peptide

<400> 116

Leu Ala Gly Cys Gly Val Gly Phe Pro Val Arg Pro Gln Val Pro Leu
1 5 10 15

Arg Pro Met Thr Tyr Lys Ala Ala Val Asp Leu Ser His Phe Leu Lys
20 25 30

Glu Lys Gly Gly Leu Glu Trp Val Tyr His Thr Gln Gly Tyr Phe Pro
35 40 45

Asp Trp Gln Asn Tyr Thr Pro Gly Pro Gly Ile Arg Tyr Pro Leu Thr
50 55 60

Phe Gly Trp Cys Phe Lys Leu Val Pro Val Glu Pro
65 70 75

<210> 117
<211> 47
<212> DNA
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<220>
<223> Primer Solnef1

<400> 117
aagctagctg gttgcggtgt gggtttcccg gttcgtcctc aggttcc 47

<210> 118
<211> 49
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer i-solnef2

<400> 118
caacagctgc tttgtaagtc atcggacgca gaggaacctg aggacgaac 49

<210> 119
<211> 47
<212> DNA
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<220>
<223> Primer Solnef3

<400> 119
acttacaaag cagctgttga cctgtctcac ttcctgaaag aaaaggg 47

<210> 120
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<212> DNA
<213> Artificial Sequence

<220>
<223> Primer i-solnef4

<400> 120
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<210> 121
<211> 50
<212> DNA
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<220>
<223> Primer Nef-orig1

<400> 121
gaatgggttt accacacgca gggctacttt ccggattggc agaactacac 50

<210> 122
<211> 50
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<220>
<223> Primer Nef-orig2

<400> 122
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<400> 123
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<210> 124
<211> 58
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<220>
<223> Primer i-Nef-orig4

<400> 124
cttccatacc agcacttcct tctccggttc aaccggcacc agcttgaaac accaaccg 58

<210> 125
<211> 59
<212> DNA
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<220>
<223> Primer i-Nef-orig5

<400> 125
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<210> 126
<211> 50
<212> DNA

<213> Artificial Sequence

<220>
<223> Primer i-Nef-orig6

<400> 126
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<210> 127
<211> 45
<212> DNA
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<220>
<223> Primer i-74nefNotba

<400> 127
gcgtatgcgg ccgctattac ggttcaaccg gcaccagctt gaaac 45

<210> 128
<211> 320
<212> DNA
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<220>
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<400> 128
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acttacaaag cagctgttga cctgtctcac ttcctgaaag aaaagggtgg cctggaatgg 120

gtttaccaca cgcagggcta ctttccggat tggcagaact acactccagg tccaggtatc 180

cgttatcctc tgaccttcgg ttggtgtttc aagctggtgc cggttgaacc ggagaaggaa 240

gtgctggtat ggaagttcga ctctcgtctg gcattccatc atatggctcg tgaactgcac 300

taataggcgg ccgcataggg 320